Matrix™ N-Series Gold Distributed Forwarding Engines (DFEs)

- Designed for the Matrix N-Series chassis
- High-density 10/100, 10/100/1000, 100FX and Power-over-Ethernet modules
- Optimized for the edge of the enterprise network
- Non-redundant and redundant configurations via software-only upgrade
- Support for Enterasys' Integrated Services Design including Advanced Routing

Data Sheet

- **Edge optimized for the enterprise**
  - — Supports high-density, 10/100, 10/100/1000 and 100FX interfaces
  - — Cost-effective, scalable, edge connectivity
- **Integrated Services Design**
  - — Reduces the number/type of modules required; simplifies network design
  - — Lowers entry cost; lowers maintenance and sparing costs
- **Optional 1+1 system redundancy**
  - — Switching, routing, and management stateful failover; modules self-learn configurations
  - — Increases reliability and fault tolerance; reduces configuration time; maximizes uptime
- **Common DFE design and feature set**
  - — Common chassis, management (CLI, web management, etc.) and baseline features
  - — Simplified end-to-end enterprise deployment
- **Advanced security**
  - — Static and dynamic policy
  - — 802.1X, MAC and web-based authentication
- **Support for converged applications**
  - — Standards-based 802.3af Power over Ethernet

Optimized for the Network Edge

The Gold Distributed Forwarding Engine (DFE) modules for the Matrix N-Series are designed specifically for high-density, 10/100, 10/100/1000 and 100FX network edge applications. This new line of DFEs provides a very cost-effective and flexible option for customers deploying switching at the edge of the network.

Leveraging Enterasys' nTERA™ ASICs, the Gold DFEs deliver scalable performance and flexibility to ensure comprehensive switching, routing, Quality of Service, security, and traffic containment unmatched by competitive solutions.

The Gold DFEs are supported in the Matrix N1, N3, N5 and N7 platforms for guaranteed investment protection across the entire series. Through a flexible, optional software upgrade, these modules support 1+1 redundancy and advanced routing for mission-critical network applications.

Module Configurations

The Gold DFEs provide flexibility with a variety of port-density and technology options for the edge:

- 48 10/100Base-TX RJ45 ports with one expansion module slot
- 48 10/100Base-TX RJ21 ports with one expansion module slot
- 72 10/100Base-TX RJ45 ports
- 72 10/100Base-TX RJ21 ports
- 40 10/100/1000Base-TX RJ45 ports with one expansion module slot
- 60 10/100/1000Base-TX RJ45 ports
- 48 100Base-FX MT-RJ ports with one expansion module slot
- 48 10/100Base-TX RJ45 with Power over Ethernet and one expansion slot
- 6 1000Base-X Mini-GBIC port network expansion module

All modules can be installed in any Matrix N-Series chassis-based solution. Those modules with an expansion module slot support a 6-port 1000Base-X Mini-GBIC network expansion module.

Scalable Edge Connectivity

The Gold DFE dramatically increases the edge density for 10/100 and 10/100/1000 connectivity with the highest module density in the industry. This not only provides extensive scalability, but also optimizes the cost-effectiveness of the Matrix N-Series.

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Density and Performance

The Matrix N-Series provides high performance and high density:

	Matrix N1	Matrix N3	Matrix N5	Matrix N7
Performance (Mpps)	13.5 Mpps	40.5 Mpps	67.5 Mpps	94.5 Mpps
Capacity	18 Gbps	54 Gbps	90 Gbps	126 Gbps
10/100 Base-TX Ports	72	216	360	504
10/100/1000 Base-TX Ports	60	180	300	420
100Base-FX Ports	48	144	240	336
1000 Base-X Ports	12	36	60	84
10-Gigabit Ethernet Ports	2	6	10	14

Common Enterasys Switching, Routing and Management

The Gold DFE uses the common base capabilities of the Matrix N-Series family. As such, Matrix N-Series switches configured with Gold DFEs offer a consistent feature set and management functionality. This reduces implementation and management costs of an end-to-end Enterasys network.

Performance/Capacity

Switching Fabric Bandwidth Capacity
18.0 Gbps per DFE

Switching Throughput
6.5 Mpps (measured in 64-byte packets)

Routing Throughput
6.5 Mpps (measured in 64-byte packets)

Address Table Size
32k MAC Addresses

VLANs Supported
4,094

Transmit Queues
4

Classification Rules
6K/chassis

Memory
Main Memory: 128, Mb, expandable to 256 Mb

Flash Memory: 32 Mb, expandable to 64 Mb

Embedded Services

Switching/VLAN Services

Generic VLAN Registration Protocol (GVRP)
802.1Q VLANs
802.1D MAC Bridges
802.1w Rapid-Reconvergence of Spanning Tree
802.1s Multiple Spanning Tree
802.3ad Link Aggregation
Broadcast Suppression
802.3x Flow Control
IDS Redirect
IGMP v1/v2
Jumbo Packet with MTU Discovery Support for Gigabit Ethernet ports
Flow Set-Up Throtting
Span Guard

IP Routing

Basic IP Routing Package: Part of Enterasys Operating System (EOS) and included in all Gold DFEs
Static Routes
RIPv1/v2
RIP Equal Cost Multipath (ECMP)
IGMPv1/IGMPv2
ICMP
Virtual Router Redundancy Protocol (VRRP)
ACL Basic
DHCP Relay

Extended IP Routing Package: A software upgrade (N-EOS-L3) sold on a per-chassis basis.
OSPF with Multipath Support
DVMRP
Extended ACLs
PIM-SM
LS-NAT

Only one license is required per Matrix N3, Matrix N5, or Matrix N7 chassis.

Security (User, Network, and Host)

Telnet (Inbound/Outbound)
Secured Shell (SSHv2) (switch interface only)
Syslog
802.1X Port-Based Network Access Control (Single User)
Web-based authentication
MAC-based authentication
Multiple authentication types (802.1X, MAC address, web) per port

Management, Control, and Analysis

SNMP v1/v2c/v3
Web Support
Industry-Standard CLI Support
Single IP Address Management
Support for Multiple, Editable Configuration Files
DHCP Client
RADIUS Client Support with PAP and CHAP
Entity MIB
COM Port Boot Prom Download via ZMODEM
RMON (Nine Groups)
High-Capacity RMON (64-bit counters)
Simple Network Time Protocol (SNTP)
Trace Route
Dynamic Egress
Inbound Rate Policing
Node and Alias Table
Enterasys Discovery Protocol (EDP)
Port-Based MAC Locking
Access Control Lists

Network Management

NetSight Console
NetSight Policy Manager
NetSight Inventory Manager
NetSight Automated Security Manager

Specifications

Physical Specifications

Dimensions

46.43 cm (18.28") H x 6.05 cm (2.38") W x 29.51 cm (11.62") D

Weight

5.54 kg (12 lbs), gross shipping; 4.10 kg (9 lbs), net

Environmental Specifications

Operating Temperature

5° C to 40° C (41° F to 104° F)

Non-Operating Temperature

-30° C to 73° C (-22° F to 164° F)

Operating Humidity

5% to 90% RH, non-condensing

Power Consumption

100 to 125 VAC or 200 to 250 VAC; 50 to 60 Hz

Agency and Standards Specifications

Safety

UL160950, CSA 60950, EN 60825, EN 60950, IEC 60950

Electromagnetic Compatibility

47 CFR Parts 2 and 15, CSA C108.8, EN 55022, EN 55024, EN 61000-3-2, EN 61000-3-3, AS/NZS CISPR 22, VCCI V-3

IEEE Standards

IEEE 802.3
IEEE 802.1D
IEEE 802.1p
IEEE 802.1Q
IEEE 802.1w
IEEE 802.1s
IEEE 802.1X
IEEE 802.3ad

Power over Ethernet

IEEE 802.3af
Total PoE Power: 4,800 watts per chassis
(7.5w) on all ports simultaneously
Support Class 1 (4w), Class 1 (4w), Class 2 (7.5w) and Class 3 (15.4w) PoE devices
Fully loaded chassis will power Class 2 devices
Automated or manual PoE power distribution
Per-port enable/disable
Per-port power level
Per-port priority safety
Per-port overload and short-circuit protection
System power monitor

Ordering Information

Gold Distributed Forwarding Engines (DFEs)

4H4282-49
Gold Distributed Forwarding Engine with 48 10/100Base-TX ports via RJ45 connectors and 1 expansion module slot

4H4283-49
Gold Distributed Forwarding Engine with 48 10/100Base-TX ports via RJ21 connectors and 1 expansion module slot

4H4202-72
Gold Distributed Forwarding Engine with 72 10/100Base-TX ports via RJ45 connectors

4H4203-72
Gold Distributed Forwarding Engine with 72 10/100Base-TX ports via RJ21 connectors

4G4282-41
Gold Distributed Forwarding Engine with 40 10/100/1000Base-TX ports via RJ45 connectors and 1 expansion module slot

4G4202-60
Gold Distributed Forwarding Engine with 60 10/100/1000Base-TX ports via RJ45 connectors

4H4284-49
Gold Distributed Forwarding Engine with 48 100Base-FX ports via MTRJ connectors

4H4285-49
Gold Distributed Forwarding Engine with 48 10/100Base-TX ports via RJ45 connectors with Power over Ethernet and one expansion module slot

Network Expansion Modules (NEM)

7G-6MGBIC-A
Network Expansion Module with 6 1000Base-X ports via Mini-GBIC

Mini-GBIC Modules

MGBIC-LC01
Mini-GBIC with 1000Base-SX port via LC connector

MGBIC-LC03
Mini-GBIC with1000Base-LX/LH (long-haul 2km) MMF port via LC connector

MGBIC-LC09
Mini-GBIC with1000Base-LX port via LC connector

MGBIC-MT01
Mini-GBIC with1000Base-SX port via MTRJ connector

MGBIC-02
Mini-GBIC with 1000Base-T port via RJ45 connector

MGBIC-08
Mini GBIC with 1000Base-LX/LH (long-haul 70Km) SMF port via LC connector

Ordering Information

Software

N-EOS-L3
Enterasys Operating System Advanced Feature Package for Matrix N-Series Switches

N-EOS-RED
Enterasys Operating System (EOS) 1+1 High Availability upgrade for Matrix N-Series switches (with Gold DFE only)

Note:
1. *Gold Distributed Forwarding Engines (DFEs) are designed to work seamlessly with other Gold DFEs in the same chassis; however, they cannot be mixed with Platinum DFEs in the same chassis.*
2. *By default, the Gold DFE does not provide high availability (system redundancy).To get 1+1 redundancy, the N-EOS-RED software license must be purchased and installed.*
3. *Basic EOS routing is included with each Gold DFE. EOS supports static routes and RIP.*
4. *Only one Advanced Routing Module (N-EOS-L3) is required per chassis (N3, N5, or N7).*
5. *The Advanced Routing Package (N-EOS-L3) includes OSPF, DVMRP, and PIM-SM.*

Warranty

As a customer-centric company, Enterasys is committed to providing the best possible workmanship and design in our product set. In the event that one of our products fails due to a defect in one of these factors, we have developed a comprehensive warranty that protects you and provides a simple way to get your products repaired as soon as possible.

Service and Support

Enterasys understands that superior service and support is a critical component of ***Networks that Know***.™ The Enterasys **SupportNet Portfolio**—a suite of innovative and flexible service and support offerings—completes the Enterasys solution. SupportNet offers all the post-implementation support services you need—online, onsite or over the phone—to maintain your network availability and performance.

Additional Information

For additional information on the Matrix, visit **enterasys.com/products/switching**

Contact Information

Contact Enterasys Sales at **877-801-7082** or **enterasys.com/corporate/contact/contact-sales.html**

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